



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): HOLL, Richard

Serial No.: 10/656,627

Filed: September 5, 2003

Title: METHODS OF OPERATING SURFACE REACTORS AND REACTORS
EMPLOYING SUCH METHODS

COMMENTS ON PATENTABILITY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I wish to bring to the examiner's attention prior art patent US 6,858,189 to Ramshaw, et al. (the "189 Patent," attached), which is material to the patentability of the above captioned application.

I do not represent and am not an authorized representative for the Applicant for the above captioned application.

Claim 1 of the present application is reproduced below; added to the text are the elements of or cites from the '189 Patent that correspond to the claim elements of the present application. For example, the disk 3 of the '189 patent corresponds to the reactor body:

1. Methods of operating surface reactors comprising the steps of:
providing a reactor body (3) having a reactor surface (5);
feeding a first reactant (15) to the reactor surface (5) at a first entry location (13) and at a rate such that the reactant (15) spreads out on the surface (5) from the entry location (13) in the form of a first thin film (17); (see Figure 11; column 4, lines 5 to 36; column 10, lines 4 to 11)
feeding a second reactant to the reactor surface (5) at a second entry location (13') and into the first film (17) in the form of a second thin film in order to interact with the first film (17); (see Figure 11; column 4, lines 5 to 36) and
collecting the resultant product of the first and second films at the periphery of the surface (column 4, line 66 to column 5, line 8).

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Claims 2-3 of the present application are reproduced below with additions to show elements of or cites from the '189 Patent that correspond to the claim elements:

2. A method as claimed in claim 1, wherein the second film is fed into the first film at a first distance from the first entry location, and a third film of a third reactant is fed into the film formed by the mixture of the first and second reactants at a third entry location at a second distance from the first entry location (column 4, lines 5 to 36 reference "at least one further trough" – thus encompassing a third entry location).

3. A method as claimed in claim 1, wherein the reactor surface (5) is provided by a rotor (2) mounted by a support body (3) and spun about a rotation axis (6); (Figure 1; column 9, lines 44 to 50) wherein the reactor surface (5) extends radially from the rotation axis (6) (Figure 1); and wherein the films (17) move radially on the reactor surface (5) under centrifugal force provided by the spinning of the rotor (6) (column 9, lines 49 to 51; column 1, lines 17 to 21; Figure 11).

Claims 4 and 5 may be indefinite, as there is no recitation as to how any impedance to interaction between two films as a result of molecular clusters may be overcome, nor as to how molecular clusters may be broken up. Moreover, the '189 Patent discusses the generation of high gravity fields in the film (column 1, lines 17 to 23) to provide improved mixing, which will inherently cause break up of molecular clusters and overcome any impedance to interaction between two films.

Claim 6 of the present application is reproduced below with additions to show elements of or cites from the '189 Patent that correspond to the claim elements:

6. A method as claimed in claim 1, wherein each film is fed into the respective film (17) that receives it through a respective circular venturi nozzle (4, 4') producing an increase in the velocity of the film for its encounter with the corresponding film (17) (Figure 11)

Although the '198 patent does not explicitly disclose venturi nozzles as the feed means (4, 4'), it would seem obvious to use such means.

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Claim 7 of the present application is reproduced below with additions to show elements of or cites from the '189 Patent that correspond to the claim elements:

7. A method as claimed in claim 1, wherein a retaining surface (71) is provided coextensive with the reactor surface (5) and passage of the films (17) takes place in a gap (73) formed between the reactor (5) and the retaining surface (71). (Figure 8; column 4, lines 51 to 54)

The rotary impeller of Figure 8 of the '189 Patent may be a disc shaped structure mounted coaxially with the support element and close thereto.

Regarding claim 8 of the present application, although the '189 Patent is silent as to the precise dimension of the gap (73), this would appear to be a routine engineering consideration.

Regarding claim 9 of the present application, although the '189 Patent does not explicitly teach the provision of heat exchange means in the impeller (71), column 9, lines 64 to 66 does disclose the provision of heating coils in the spinning disc (3) for effecting heat transfer to the film (17). Accordingly, it would seem obvious to provide heat transfer means in the retaining surface of the reactor off the above captioned Application, since the function of such heat transfer means is wholly equivalent to that of the heat transfer means of the '189 Patent.

Claim 10 of the present application is reproduced below with additions to show elements of or cites from the '189 Patent that correspond to the claim elements:

10. A method as claimed in claim 1, wherein the reactor surface (5) is polished to a glass-like smoothness (column 11, line 40; column 8, line 26)

The '189 Patent discloses a "smooth brass disc", and also a non-stick disc. Thus, the provision of a surface of "glass-like smoothness" would appear at least obvious, if not lacking in novelty.

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Claims 11 to 20 of the above captioned application are simply apparatus equivalents to the methods of claims 1 to 10, and the above analysis applies equally thereto.

Respectfully submitted,

Zeev Pearl

Dated: August 23, 2005